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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPLICANT(s):	Kalliokulju et al.		
SERIAL NO.:	09/443,262	ART UNIT:	2682
FILING DATE:	11/22/99	EXAMINER:	Ly, Nghi H.
TITLE:	METHOD AND ARRANGEMENT FOR AVOIDING LOSS OF ERROR-CRITICAL NON REAL TIME DATA DURING CERTAIN HANDOVERS		
ATTORNEY DOCKET NO.:	297-008939-US(PAR)		

Commissioner of Patents
Washington, DC 20231
ATTENTION: BOARD OF PATENT APPEALS AND INTERFERENCES

APPELLANTS' BRIEF
(37 C.F.R. §1.192)

This is an appeal from the final rejection of the claims in the above-identified application. A Notice of Appeal was mailed on 1/23/03. The fees required under 37 C.F.R. §1.17 are being submitted herewith. This brief is being submitted in triplicate. The appendix of claims are attached hereto.

I. REAL PARTY IN INTEREST

The real party in interest in this Appeal is:

Nokia Mobile Phones, Ltd.

II. RELATED APPEALS AND INTERFERENCES

None

III. STATUS OF CLAIMS

Claims 1-23 are pending in the application.

Claims 1 and 5-9 have been finally rejected.

Claims 2-4 are objected to.

The claims on appeal are 1 & 5-9.

Claims 10-23 are allowed.

IV. STATUS OF AMENDMENTS

The amendment filed after final rejection was entered.

V. SUMMARY OF INVENTION

In brief, the present invention is a method for performing handover of a mobile station from one fixed part of a telecommunication system to another fixed part. A problem is that the various protocol layers are complex and consume power. To solve this problem, the present invention suspends a non-real time connection before performing the handover. After the handover, the suspended connection is resumed. Thus an error correction protocol layer can be eliminated since most errors occur during handover. This reduces complexity and power consumption.

The invention as defined by the independent claim is:

1. A method for a mobile station (Fig. 5; MS, 501) for performing a handover from a first network connection (RNC1) to a second network connection (RNC2) in mobile telecommunication system providing for non-real time telecommunication connections over a radio interface between mobile stations and the fixed parts (504, 505) of the mobile telecommunication system, comprising in the order recited the steps of:

suspending (Fig. 7b; 704) at least one active non-real time telecommunication connection between a mobile station and the fixed parts of the mobile telecommunication system,

performing (702') a handover from the first network connection to the second network connection, and

resuming (705) the suspended non-real time telecommunication connection.

VI. ISSUES

1. Whether claims 1 & 9 are unpatentable under 35 U.S.C. 103 over Whinnett in view of Jayapalan.

2. Whether claim 5 is unpatentable under 35 U.S.C. 103 over Whinnett in view of Jayapalan, and further in view of the admitted prior art.

3. Whether claim 6 is unpatentable under 35 U.S.C. 103 over Whinnett and Jayapalan, and further in view of the admitted prior art and Frodigh.

4. Whether claim 7 is unpatentable under 35 U.S.C. 103 over Whinnett in view of Jayapalan, and further in view of Frodigh.

5. Whether claim 8 is unpatentable under 35 U.S.C. 103 over Whinnett in view of Jayapalan, and in further view of Kanerva.

VII. GROUPING OF CLAIMS

The claims stand or fall together.

VIII. ARGUMENT

While it is true that Whinnett discloses the process of a mobile station performing a handover, but the applicants respectfully point out that handovers have been known for at least ten years before the present invention was made, and since applicants are not claiming a simple handover process, Whinnett has only very limited pertinence to the patentability of the present invention. Whinnett relies completely on concepts such as "telephone", "call", and "TDMA", which are all features of

conventional circuit-switched wireless telephone networks. All telephone calls invariably involve real-time connections, because even minor delays and timing errors are immediately noticeable and highly irritating to the participants of a telephone call. On the contrary, the applicants have explicitly mentioned in the pending independent claim 1 that the invention only concerns non-real-time connections. Suspending a telephone call like those discussed in Whinnett, and resuming communication after a temporary suspension-combined with the immediate transmission of all data that was not sent during the suspension-is not possible for the same reason: the participants of the call would first be annoyed to notice that a silent pause suddenly begins in the telephone call, and the same participants could then be very puzzled when the suspension ended with a burst of unsent speech suddenly emerging from their earpieces. It is therefore fundamentally impossible to combine Whinnett with any other publication that mentions anything referring to suspending a connection.

Considering Jayapalan, it is noted that it also concerns exclusively circuit-switched services. A fax call is comparable to a telephone call with the only difference that the audio signals that in an ordinary telephone call carry speech carry coded intensity data instead in a fax call. Therefore the concept of a fax call as taught by Jayapalan still fails to disclose non-real-time communications which is the explicitly recited subject of the applicants' claimed invention.

Even if one would, for the sake of example only, equate a fax transmission with non-real-time data, there is a fundamental difference between the applicants' invention and the disclosure

of Jayapalan. Contrary to the Examiner's assertion, Jayapalan does not disclose the concept of suspending transmissions for the duration of a handover. To understand this, one must carefully consider what is actually disclosed in Jayapalan's Fig. 2 and the associated description in column 2, lines 65-67. The entity 10 inside the broken line box is a mobile station, i.e., a mobile telephone. When we speak about a network connection that is, or is, not suspended, we speak about the connection between the mobile station and the cellular radio network. In Jayapalan's Fig. 2 there is further a local connection between the mobile telephone 10 and a fax machine 14 through an adapter 13A, but this connection is only between a transceiver and an application that locally utilizes the services of the transceiver.

Now one must carefully examine, what actually happens between the various blocks of Jayapalan's Fig. 2 when a handover becomes imminent. The mobile telephone 10 issues a handover warning to the fax adapter 13A. The last-mentioned reacts by entering a search mode, where it looks for the next EOL (end-of-line) character in the data stream it receives from the fax machine 14 to a buffer memory 13B and starts conjuring filler bits that it feeds to the mobile telephone 10 instead of any actual fax data. All this has been described on lines 35-45 of column 3 in Jayapalan.

The important thing to understand is that the mobile telephone 10 does not have the slightest idea about the information content (if any) of the bits it receives as a transmission stream from the fax adapter 13A. Even if the last-mentioned switched to transmit filler bits instead of actual fax data, the

mobile station 10 continues transmitting these filler bits over the network connection exactly as if they contained fax data. The decision of the fax adapter 13A to transmit filler bits instead of actual fax data has no effect whatsoever on the circuit-switched connection between the mobile telephone 10 and the cellular radio network. In other words, there is no such thing in Jayapalan as suspending transmissions in a connection. The information content of the data transmitted over a connection changes from meaningful data into doesn't care filler bits (and back to meaningful data after the handover), but this change only means something to the facsimile machine that is receiving the transmission at the very other end of the point-to-point telephone connection. All other devices along the communication connection, including the mobile telephone and all parts of the cellular radio network, handle the connection during a handover exactly as if the transmitted information was something meaningful. They will never even become aware of the fax adapter's decision about replacing meaningful data bits with filler bits for a certain duration of time.

The applicants' invention of claim 1 explicitly recites an "active non-real time telecommunication connection between a mobile station and the fixed parts of the mobile telecommunication system to be suspended." This is definitely something that does not take place in Jayapalan, which only suggests changing the information content of such a connection and never making any changes to the way in which to handle the connection between a mobile station and the fixed parts of the mobile telecommunication system. Therefore the reference publication of Jayapalan is, both alone and in combination with

Whinnett, not pertinent to the patentability of the present invention.

There is still another, more subtle difference between Jayapalan and the applicants' invention. A fax transmission as considered by Jayapalan consists of lines, each of which further consists of dots. Taking a typical modest resolution of 150 dots per inch and a typical line length of 8 inches, one line has something like 1200 dots. Even if only monochrome mode were used with absolutely no channel coding, the fax would need at least 1200 bits to transmit the information content of one line. A cellular telephone is typically capable of a maximum data rate of 9600 bits per second, which means that it takes an absolute minimum of 0.125 seconds to transmit the information content of a single line in a telefax. Note that the higher fax resolution, use of grayscale (more than one bit for each dot), channel coding, and suboptimal transmission conditions (which is typically the case when a handover is imminent) all serve to lengthen said minimum transmission time. A handover, on the other hand, may become imminent very quickly, in the matter of milliseconds (the frame length of for example the European GSM system is 4.615 ms, and a handover command coming in one frame may become effective in any of the immediately following frames). Comparing the time scale of a typical handover situation to the default time it takes for the next EOL to be found in a fax transmission, we see that a handover may be in progress well before Jayapalan's fax adapter finds the next EOL after which it only starts transmitting the filler bits. Therefore Jayapalan does not unambiguously teach any kind of modifications to the transmissions before a handover is a reality. The applicants explicitly require in the present

claims, i.e."…in the order recited…", that the suspension becomes effective before the beginning of the actual handover process.

A corollary of the relatively slow reacting capability of Jayapalan's arrangement compared to the time scale of a typical handover is that Jayapalan is unable to completely avoid loss of transmitted data. If a handover has already begun before Jayapalan's fax adapter finds its next EOL, all data that was transmitted in between is in danger of being lost. The applicants suggested order of suspending transmissions first and beginning the handover only thereafter eliminates all such risks of losing data. It is thus impossible to achieve similar results in Jayapalan's arrangement and the applicants' claimed invention, which further shows that Jayapalan is not pertinent to the applicants' pending independent claims.

In summary, claim 1 recites "non-real time" (3 times) and "in the order recited", i.e., suspension is done before handover. These limitations define over the Whinnett and Jayapalan even when taken in combination. Therefore claims 1 and 9 are unobvious under 35 U.S.C. 103 on this combination of references.

Since the admitted prior art, Frodigh, and Kanerova also fail to disclose or suggest these features, the rejections of claims 5-8 under 35 USC 103 on them in combination with the above references should be withdrawn.

CONCLUSION

In conclusion, for all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, this honorable Board is respectfully requested to reverse the decision of the Examiner.

The appendix of claims is attached hereto. A check in the amount of $320 is enclosed herewith for the appeal brief fee. The Commissioner is hereby authorized to charge payment for any additional fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,

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March 12, 2003
Date

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Person Making Deposit

IX. APPENDIX OF CLAIMS

The texts of the claims involved in the appeal are:

1. A method for a mobile station for performing a handover from a first network connection to a second network connection in a mobile telecommunication system providing for non-real time telecommunication connections over a radio interface between mobile stations and the fixed parts of the mobile telecommunication system, comprising in the order recited the steps of:

- suspending at least one active non-real time telecommunication connection between a mobile station and the fixed parts of the mobile telecommunication system,

- performing a handover from the first network connection to the second network connection, and

- resuming the suspended non-real time telecommunication connection.

5. A method according to claim 1, wherein the non-real time telecommunication connections are arranged according to a certain structure of protocol stacks in a mobile station, a radio access network, a serving support mode of a packet-switched data transfer network and a gateway support node of a packet-switched data transfer network, and the method comprises the steps of

communicating between a number of first peer entities between the mobile station and the radio access network, wherein said first peer entities are composed of a physical layer, a Media Access Control layer and a Radio Link Control layer,

communicating between a number of second peer entities between the radio access network and the serving support node of a packet-switched data transfer network, wherein said second peer entities are composed of a physical layer, a Network Service layer and a protocol layer for communication between the radio access network and the packet-switched data transfer network, and

communicating between a number of third peer entities between the mobile station and the serving support node of a packet-switched data transfer network, wherein said third peer entities are composed of a Subnetwork Dependent Control Protocol Layer which in the mobile station is immediately on top of the Radio Link Control layer and in the serving support node of a packet-switched data transfer network is immediately on top of the protocol layer for communication between the radio access-network and the packet-switched data transfer network.

6. A method according to claim 5, additionally comprising the steps of performing error detection and error-related retransmission as well as flow control between the mobile station and the radio access network on said Radio Link Control layer.

7. A method according to claim 1, wherein the first network connection and the second network connection are packet-switched connections for transmitting error-critical data.

8. A method according to claim 1, wherein the fist network connection and the second network connection are non-transparent circuit-switched connections.

9. A mobile station for communicating with the fixed parts of a mobile telecommunication system over network connections, comprising means for executing the method according to claim 1 in order to perform a handover from a first network connection to a second network connection.